WHAT IS CLAIMED IS:

1. A method of biosynthetically labeling RNA in a cell of interest, the method comprising:

contacting said cell with a purine or pyrimidine analog having a reactive moiety not normally present in RNA, wherein said cell comprises a phosphoribosyltransferase or nucleoside kinase or phosphorylase that can specifically incorporate said purine or pyrimidine analog into the corresponding nucleotide, and wherein said purine or pyrimidine analog is incorporated into RNA synthesized by said cell;

obtaining RNA from said cell; and

conjugating a tag to said reactive moiety.

2. The method according to Claim 1, wherein sequences encoding said phosphoribosyltransferase or nucleoside kinase are operably linked to a promoter that is active or can be activated in said cell.

3. The method according to Claim 2, wherein said sequences encoding said phosphoribosyltransferase or nucleoside kinase are exogenous to the cell of interest.

4. The method according to Claim 1, wherein said reactive moiety is at least one thiol group.

5. The method according to Claim 1, wherein said purine or pyrimidine analog is a uracil analog.

6. The method according to Claim 1, wherein said tag is a small molecule binding partner.

7. The method according to Claim 6, wherein said tag is biotin.

8. The method according to Claim 5, wherein said tag comprises a detectable label.

9. The method according to Claim 8, wherein said detectable label is a fluorochrome, radiolabel, heavy metal label, or enzyme conjugate.

10. The method according to Claim 6, further comprising the step of binding a specific binding partner to said tag.

11. The method according to Claim 10, wherein said specific binding partner is conjugated to an insoluble substrate for affinity chromatography, and wherein said biosynthetically labeled RNA is separated from non-labeled RNA.

12. The method according to Claim 11, wherein said separated RNA is reverse transcribed.

13. The method according to Claim 11, wherein said separated RNA is amplified.

14. The method according to any of Claims 11, wherein said separated RNA is labeled with a detectable label.

15. The method according to Claim 14, wherein said separated RNA is labeled by end-labeling.

16. The method according to Claim 14, wherein said separated RNA is labeled by reverse transcriptase.

17. The method according to Claim 14, wherein said separated RNA is labeled during amplification.

18. The method according to Claim 10, wherein said specific binding partner is conjugated to a detectable label.

19. The method according to Claim 18, wherein said detectable label is a fluorochrome, radiolabel, heavy metal label, or enzyme conjugate.

20. The method according to any one of Claim 9, further comprising the step of hybridizing said RNA or derivative thereof to a nucleic acid containing substrate.

21. The method according to Claim 20, wherein said nucleic acid substrate is a northern blot, array, tissue section, or cell.

22. The method according to Claim 11, wherein said RNA is cross-linked to an interacting molecule.

23. The method according to Claim 3, wherein said promoter is constitutively active in said cell of interest.

24. The method according to Claim 3, wherein promoter is inducible.

25. The method according to Claim 24, wherein said promoter is induced by the presence of a signaling molecule.

26. The method according to Claim 24, wherein said promoter is tissue specific.

27. The method according to Claim 24, wherein said promoter is cell type-specific.

28. The method according to Claim 3, wherein said sequences encoding said phosphoribosyltransferase or nucleoside kinase are introduced into said cell of interest on a replicable vector.

29. The method according to Claim 28, wherein said replicable vector is a virus.

30. The method wherein said sequences encoding said phosphoribosyltransferase or nucleotide kinase are introduced into said cell of interest on an integrating vector.

31. The method according to Claim 1, wherein said purine or pyrimidine analog is provided in the form of a nitrogenous base.

32. The method according to Claim 1, wherein said purine or pyrimidine analog is provided in the form of a nucleoside.

33. A method of biosynthetically labeling RNA in a cell of interest, the method comprising:

contacting said cell with a uracil analog having a reactive thiol moiety not normally present in RNA, wherein said cell comprises a uracil phosphoribosyltransferase (UPRT) that can convert said uracil analog to the corresponding uridine monophosphate;

wherein said uridine analog is incorporated into RNA synthesized by said cell.

34. The method according to Claim 33, wherein sequences encoding said UPRT are operably linked to a promoter that is active or can be activated in said cell.

35. The method according to Claim 33, wherein said sequences encoding said UPRT are exogenous to the cell of interest.

36. The method according to Claim 33, wherein said uracil analog is 2,4 dithiouracil.

37. The method according to Claim 33, wherein said UPRT is *Toxoplasma gondii* UPRT or a functional derivative thereof.

38. A kit for biosynthetic labeling of RNA, the kit comprising:

a purine or pyrimidine analog having a reactive moiety not normally present in RNA; and

nucleic acid sequences encoding a phosphoribosyltransferase or nucleotide kinase that can specifically incorporate said purine or pyrimidine analog into the corresponding nucleotide.

39. The kit according to Claim 38, wherein sequences encoding said phosphoribosyltransferase or nucleotide kinase are operably linked to a promoter.

40. The kit according to Claim 38, wherein said reactive moiety is at least one thiol group.

41. The kit according to Claim 38, further comprising a tag molecule, which comprises a linker reactive with said purine or pyrimidine analog.